

METABOLOMIC APPROACH TO PREDICTING THE COURSE OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE: A NEW WORD IN DISEASE UNDERSTANDING

T. O. Pertseva, N. A. Sanina, T. S. Turlyun

Abstract

Metabolomics is the branch of science that investigates various metabolites (both intermediate and terminal metabolic products) and their role in biomatrices. In respiratory diseases, metabolomics studies focus mainly on identified metabolites, which can predict the onset and progression of severe illnesses, which can be fatal for many patients (COPD, asthma, interstitial lung diseases, malignancy, etc.). In this article, we review the current development of metabolic changes in COPD, mainly at the time of exacerbation.

The aim of the study is to make a comprehensive review of the relevant literature related to metabolomic markers of COPD and its exacerbations, as well as to investigate the potential clinical benefit of the metabolomic profile of this disease.

The review describes the technological tools and methods currently used in metabolomic research in respiratory diseases. Our team conducted a non-systematic review of relevant literature. PubMed and Scopus were the main databases of scientific information for collecting relevant publications from the international literature.

COPD and its exacerbation are a global problem of world medicine, and its biological and metabolomic characteristics still remain incompletely investigated. Metabolomics can be considered a new approach to the characterization of COPD, the basis of which is the analysis of specific metabolites in biomatrices and the stratification of patients depending on their gender, age, history, laboratory and other characteristics. Biomarkers such as chemerin, glutamine, sphingolipids, citrate, and phenylalanine are the most significant metabolites for assessing the prognosis and risk of exacerbations in COPD. However, the search and analysis of new molecules in various biological matrices (blood, urine, exhaled air condensate, etc.) continues. The use of an integrated genetic-metabolomic approach can increase the level of personalization in the treatment of patients with COPD, because it compiles a patient profile regarding the severity of the disease, predicting exacerbations and treatment response.

Key words: chronic respiratory diseases, chronic obstructive pulmonary disease (COPD), exacerbation of COPD, metabolomics, biomarkers of COPD.

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Tetyana O. Pertseva

Rector of Dnipro State Medical University

Professor of the Department of Internal Medicine 1

Academician of NAMS of Ukraine, professor

9, V. Vernadskogo str., Dnipro, 49044, Ukraine

Tel.: 38056 713-52-57, dsma@dsma.dp.ua